

(19) World Intellectual Property
Organization
International Bureau



(43) International Publication Date
30 June 2005 (30.06.2005)

PCT

(10) International Publication Number
WO 2005/060196 A1

(51) International Patent Classification⁷: **H04L 27/38**

(21) International Application Number:
PCT/JP2004/019462

(22) International Filing Date:
17 December 2004 (17.12.2004)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
2003906998 17 December 2003 (17.12.2003) AU
2004240146 15 December 2004 (15.12.2004) AU

(71) Applicant (for all designated States except US): NEC Corporation [JP/JP]; 7-1, Shiba 5-chome, Minato-ku, Tokyo 1088001 (JP).

(72) Inventor; and

(75) Inventor/Applicant (for US only): **CHUNG, Edwin** [AU/AU]; c/o NEC Australia Pty. Ltd., 635 Ferntree Gully Road, Glen Waverley, Victoria 3150 (AU).

(74) Agent: **MARUYAMA, Takao**; Maruyama Patent Office, SAM Build. 3floor, 38-23, Higashi-Ikebukuro 2-chome, Toshima-ku, Tokyo 1700013 (JP).

(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

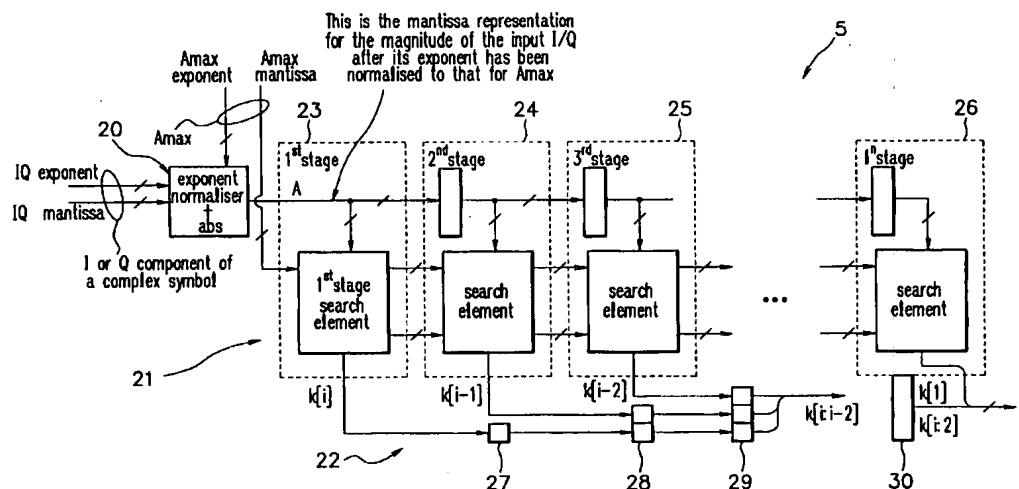
(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:

— with international search report

[Continued on next page]

(54) Title: DEMODULATION OF A MULTI-LEVEL QUADRATURE AMPLITUDE MODULATION SIGNAL



(57) Abstract: A device (5) for determining k representative of the magnitude A of an orthogonal component of a Quadrature Amplitude Modulation (QAM) symbol, including: multi-stage binary search circuitry (21) for conducting a multi-stage binary search for the value of A between predetermined maximum and minimum values Amax and Amin, each stage producing a single bit binary output; and integer value construction circuitry (22) for constructing the integer value k by juxtaposing the binary outputs from consecutive stages of the binary search, where $W = (A_{max} - A_{min}) / n$, n equals 2^i and i is an integer, Amax is a maximum detectable level of the magnitude A, Amin is a minimum detectable level of the magnitude A, and W is the incremental level between consecutive values of the integer value k.

PATENT COOPERATION TREATY

31

PCT

NOTIFICATION OF THE RECORDING
OF A CHANGE(PCT Rule 92bis.1 and
Administrative Instructions, Section 422)

From the INTERNATIONAL BUREAU

To:

MARUYAMA, Takao
Maruyama Patent Office
SAM Build. 3 floor
38-23, Higashi-Ikebukuro 2-chome
Toshima-ku, Tokyo 1700013
Japan

Date of mailing (day/month/year) 28 March 2006 (28.03.2006)	
Applicant's or agent's file reference DPF-3PCT	IMPORTANT NOTIFICATION
International application No. PCT/JP2004/019462	International filing date (day/month/year) 17 December 2004 (17.12.2004)

1. The following indications appeared on record concerning:

☒ the applicant ☒ the inventor ☐ the agent ☐ the common representative

Name and Address

State of Nationality

State of Residence

Telephone No.

Facsimile No.

Teleprinter No.

2. The International Bureau hereby notifies the applicant that the following change has been recorded concerning:

☒ the person ☐ the name ☐ the address ☐ the nationality ☐ the residence

Name and Address

BECKER, Rene
c/o NEC Australia Pty. Ltd.
635 Ferntree Gully Road
Glen Waverley, Victoria 3150
Australia

State of Nationality

AU

State of Residence

AU

Telephone No.

Facsimile No.

Teleprinter No.

3. Further observations, if necessary:

The applicant identified in Box 2 should be added as an additional applicant for US only and inventor for all designated states.

4. A copy of this notification has been sent to:

☒ the receiving Office ☒ the designated Offices concerned
☐ the International Searching Authority ☐ the elected Offices concerned
☐ the International Preliminary Examining Authority ☐ other:
The International Bureau of WIPO
34, chemin des Colombettes
1211 Geneva 20, Switzerland

Authorized officer

Michiyo TSUKADA (Fax 338 7010)

Facsimile No. (41-22) 338.70.10

Telephone No. (41-22) 338 8450